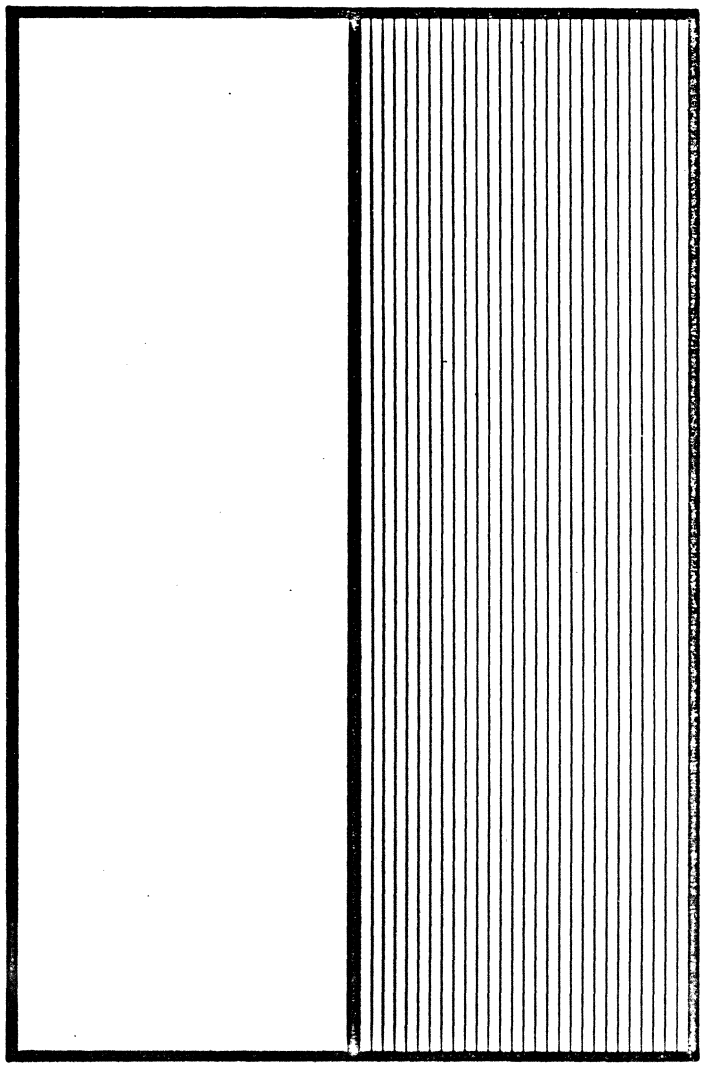
SPERRY RAND

4091700

UNIVAC 9400 SYSTEM

PROGRAM DESCRIPTION DRAWING



CUSTOMER ENGINEERING

SPERRY RAND UNIVAC

DRAWING NO. 4091700

REVISION -

CUSTOMER ENGINEERING
PRODUCT DIAGNOSTIC SOFTWARE

9400 - 8411 & 8414 DISC
TEST OPERATIONAL ANALYSIS
FLOW CHART

	SIGNATURE	TITLE	DATE
APPROVAL			
APPROVAL			
APPROVAL			
APPROVAL			

MAR 1 1971

REVISION STATISTICS RECORD

4091700

DWG REV	MSTR REV	RELEASE DATE	DESIGNER NAME	EIR NUMBER	FCO NUMBER
-	K	4/9/71	S. W. Evans	C12605	NA

REVISION DESCRIPTION RECORD

REV	DESCRIPTION
-	Initial release of suggested use of 9400 8411/8414 disc subsystem test routines.

TITLE: TROUBLESHOOTING AID FOR 8411/8414 DISC SUBSYSTEMS.

Purpose:

To provide a suggested use of 8411/8414 test programs isolating causes of disc subsystem malfunctions.

Explanation:

This flowchart is designed to act as a guide to the customer engineer to aid in isolating the cause of disc malfunctions. The flowchart indicates a suggested method of running existing disc tests. It follows a logical path of run sequence with error paths to follow. Each block in the flowchart represents a subtest in one of the disc programs. Every block indicates the subtest function and lists the commands that are issued in subtest execution. These commands are not in chaining sequence but only point out that they are issued at least once in the subtest. Each subtest block is also accompanied with a number that indicates the paragraph within the program description drawing which describes the subtest. Groups of subtest blocks enclosed within dotted lines are in the same program. Each enclosure has an indication as to the program I.D. and the program description drawing number.

Error paths may lead to subtests in other disc test programs that perform the same function as the one that failed, but in more detail. In these instances a suggested parameter entry is indicated. Many error paths will lead to the DMR's and SIO, SCOPE, and BTYPE routines. These routines have been found to be of significant value in locating malfunctions. When these routines are used in conjunction with the Inspect and Change Routine (IC) the entire chain of commands that indicated a malfunction can be duplicated and cycled. An example of the use of these routines follows:

```
JOB 1, D0110000 LOADED AT 02CB0
*A 00:00 1 ENTER 8411 DISC PARAMETERS
C 00:00 1,A C2 T1 #J80.B 8
I 00:00 START DISC TEST 1
I 00:00 START DISC TEST 8
*R 00:00 1 DISC DA 0280 TST 08
CAW: 0000 3ED0 RBC:0000
CCW: 07003E48400000006
SNS:  0  1  2  3  4  5 DS
EXP: 00 00 00 C8 00 00 0C
REC: 40 00 00 08 00 00 02
CHAIN
07003E4840000006
1A00351240000005
1600351800000010

@ 00:00 RUN IC8
```

```
JOB 2, IC000000 LOADED AT 05FD8
I 00:00 2 IC REV E IDLE
@ 00:00 2,I3E48 L0000 8
*I 00:00 2 3E48 0000 8
*I 00:00 2 3E4A 0050 8
*I 00:00 2 3E4C 0004 I3512@
*I 00:00 2 3512 0000 8
*I 00:00 2 3514 0000 8
*I 00:00 2 3516 0000 8
*I 00:00 2 3518 0000 8
*I 00:00 2 351A 0000 N@
 I 00:00 IC REV E IDLE
```

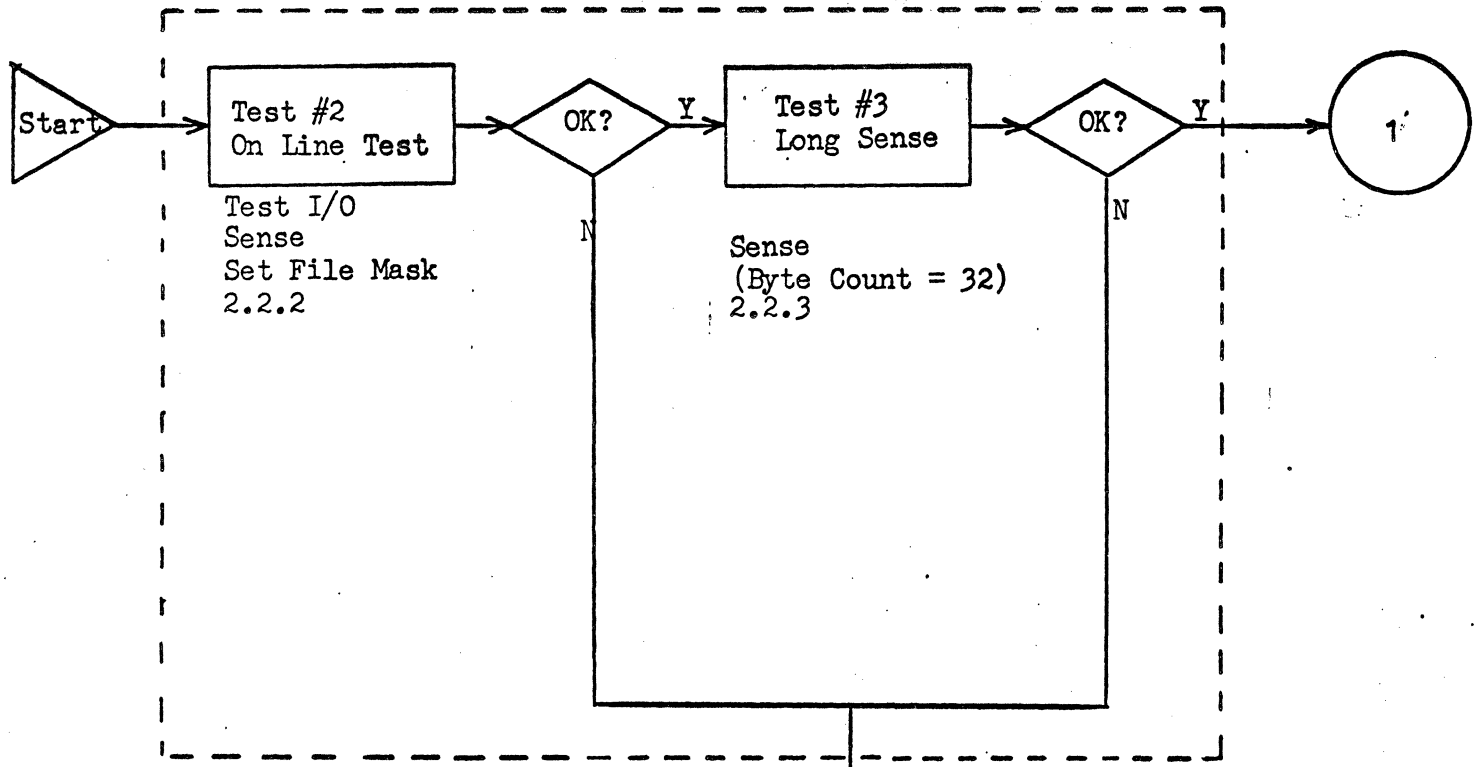
At this point it can be seen that D011 attempted a SEEK command to cylinder 80, head 04 followed by a READ Home Address and Read Record 0. The SEEK command appears to be the one that failed. By using the SCOPE, SIO and BTYPE routines, this chain can be cycled upon. If loading from tape, depress SYSTEM RESET and LOAD. Set 00200 hex into P0. Depress RUN and 'END DMR' will be displayed at the console. Depress RUN. If loading from disc depress SYSTEM RESET, LOAD and set 00380 hex into P0. Depress RUN. (Example continues)

```
9400 SERVICE ROUTINES:  LEVEL 2.00
IDLE
PRM BTYPE@
BGN 6000@ DATA
6000  00000050@ 000400000@ 00000000@ 00000000@
6010@
PRM SIO @
TYPE IN DEVICE 0280@ BCT = 00000001@
TYPE IN CCW (s)
070060000@ 40000006@
1A0060008@ 40000005@
160060108@ 00000010@
000000000@
TYPE IN DEVICE FFFF@
PRM SCOPE@
```

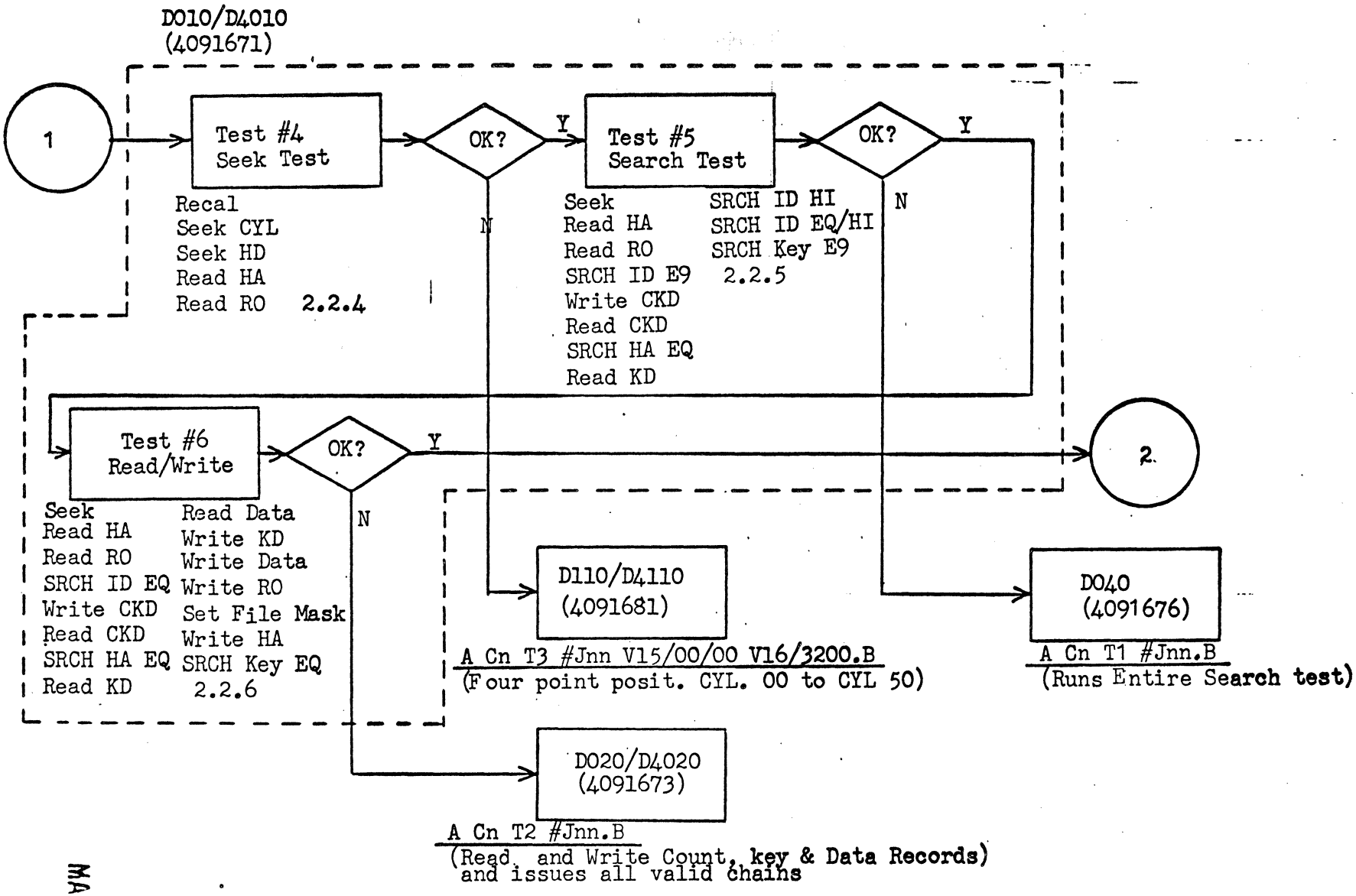
The chain will be continuously issued to allow for troubleshooting. More detailed information can be obtained for running the service routines by reading DMR TEST SEQUENCE GENERATOR (4091618).

NOTE: The running sequence, as illustrated in the flowchart, is designed to indicate most malfunctions in the shortest amount of time. If, however, time is of no great importance, the use of D120/D4120 (4091682) is recommended.

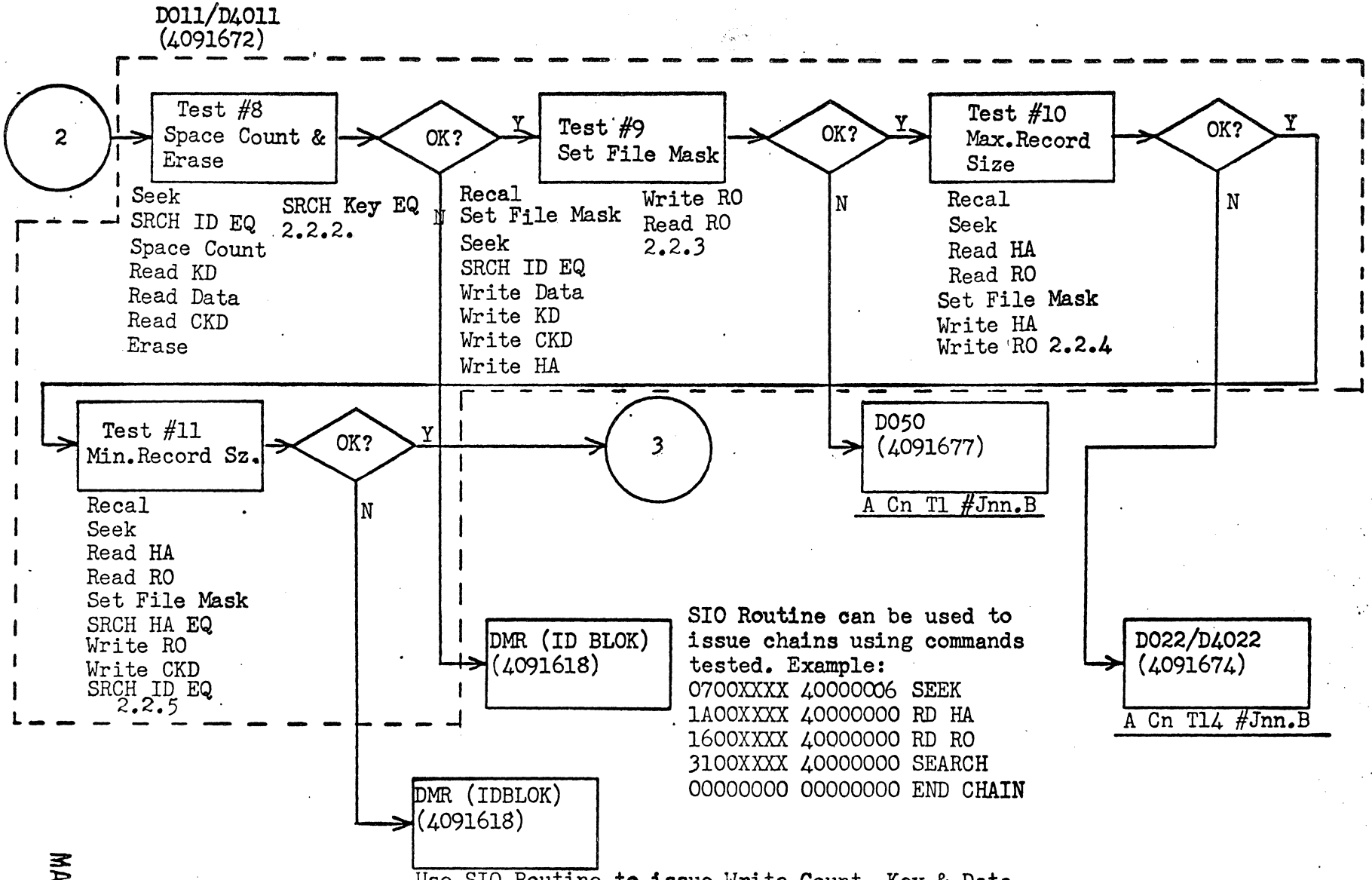
D010/D4010
(4091671)

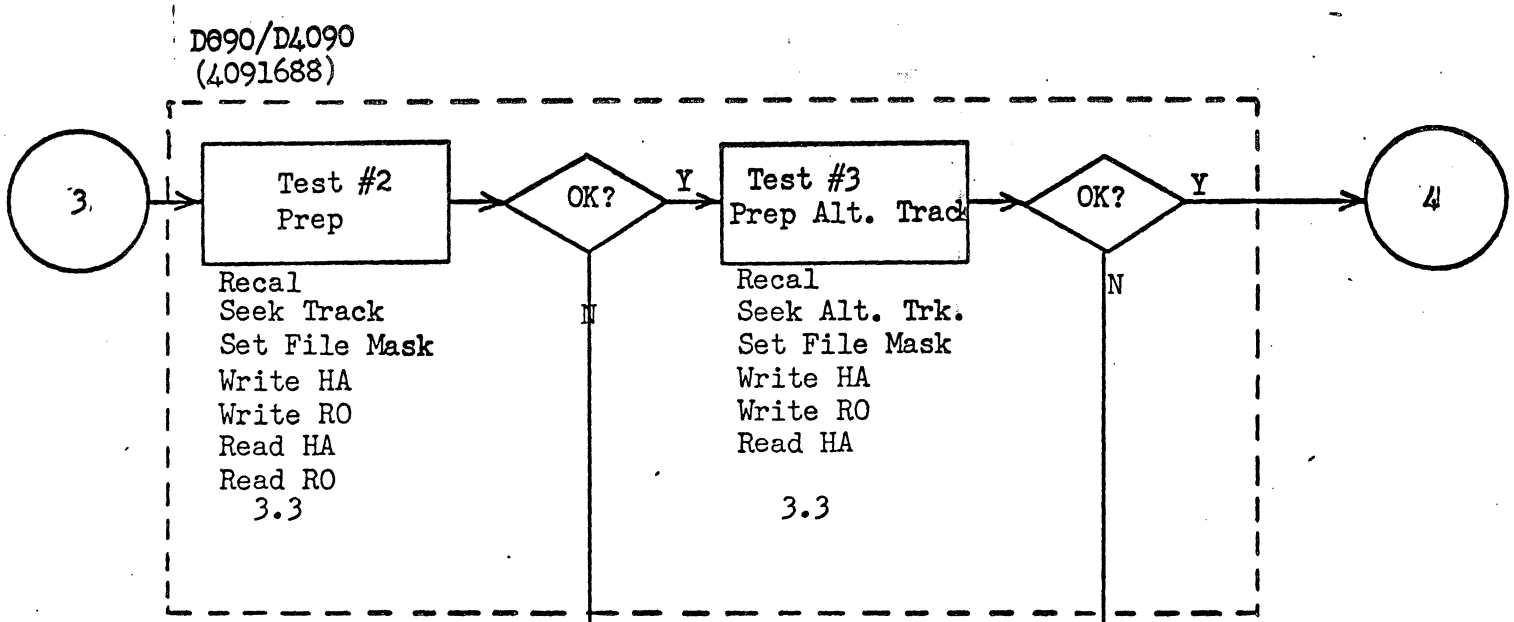


IF THESE TESTS FAIL:
CHECK FOR DEVICE "ON LINE".
USE "DMR" TO TEST SELECTOR 1 OR 2.
USE "IDBLOK", S I O OPTION TO CHECK SENSE OPERATION WITH VARYING BYTE COUNTS.
REFER "DMR MANUAL" #4091618 2.2.21- 2.2.22


D010/D4010
(4091671)
1
Test #4
Seek Test
Recal
Seek CYL
Seek HD
Read HA
Read RO 2.2.4
OK?
Y
N
Test #5
Search Test
Seek
Read HA
Read RO
SRCH ID E9
Write CKD
Read CKD
SRCH HA EQ
Read KD
SRCH ID HI
SRCH ID EQ/HI
SRCH Key E9
2.2.5
OK?
Y
N
Test #6
Read/Write
Seek
Read HA
Read RO
SRCH ID EQ
Write CKD
Read CKD
SRCH HA EQ
Read KD
Read Data
Write KD
Write Data
Write RO
Set File Mask
Write HA
SRCH Key EQ
2.2.6
OK?
Y
N
2
D110/D4110
(4091681)
A Cn T3 #Jnn V15/00/00 V16/3200.B
(Four point posit. CYL. 00 to CYL 50)
D040
(4091676)
A Cn T1 #Jnn.B
(Runs Entire Search test)
D020/D4020
(4091673)
A Cn T2 #Jnn.B
(Read and Write Count, key & Data Records)
and issues all valid chains

4081700

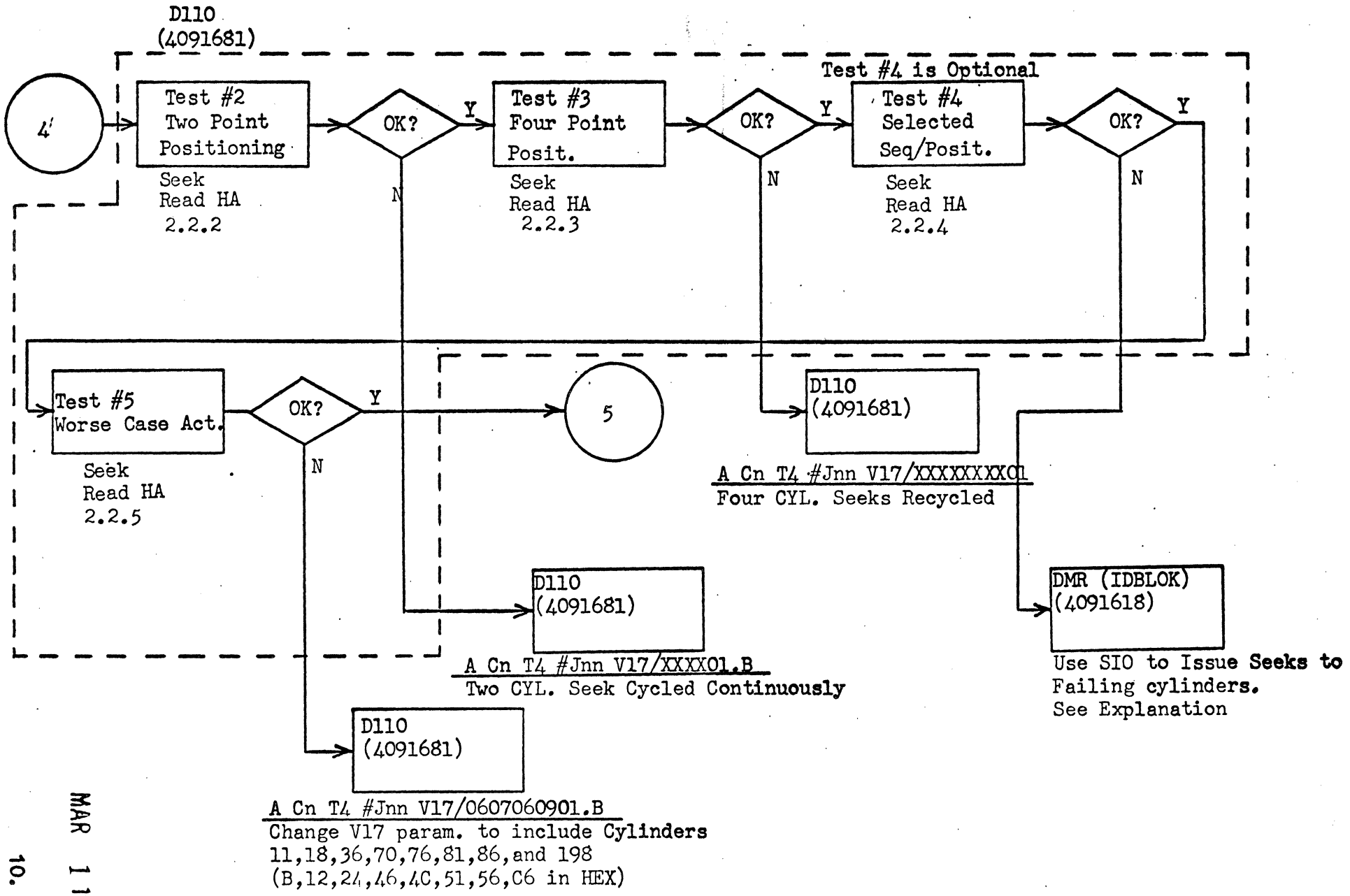

D011/D4011
(4091672)
2
Test #8
Space Count &
Erase
Seek
SRCH ID EQ
Space Count
Read KD
Read Data
Read CKD
Erase
OK?
Y
SRCH Key EQ
2.2.2.
N
Test #9
Set File Mask
Recal
Set File Mask
Seek
SRCH ID EQ
Write Data
Write KD
Write CKD
Write HA
Write RO
Read RO
2.2.3
OK?
Y
N
Test #10
Max.Record
Size
Recal
Seek
Read HA
Read RO
Set File Mask
Write HA
Write RO 2.2.4
OK?
Y
N
Test #11
Min.Record Sz.
Recal
Seek
Read HA
Read RO
Set File Mask
SRCH HA EQ
Write RO
Write CKD
SRCH ID EQ
2.2.5
OK?
Y
N
3
D050
(4091677)
A Cn T1 #Jnn.B
DMR (ID BLOK)
(4091618)
DMR (IDBLOK)
(4091618)
D022/D4022
(4091674)
A Cn T14 #Jnn.B
SIO Routine can be used to issue chains using commands tested. Example:
0700XXXX 40000006 SEEK
1A00XXXX 40000000 RD HA
1600XXXX 40000000 RD RO
3100XXXX 40000000 SEARCH
00000000 00000000 END CHAIN
Use SIO Routine to issue Write Count, Key & Data commands with byte count of 50 and decrease this count to one byte.



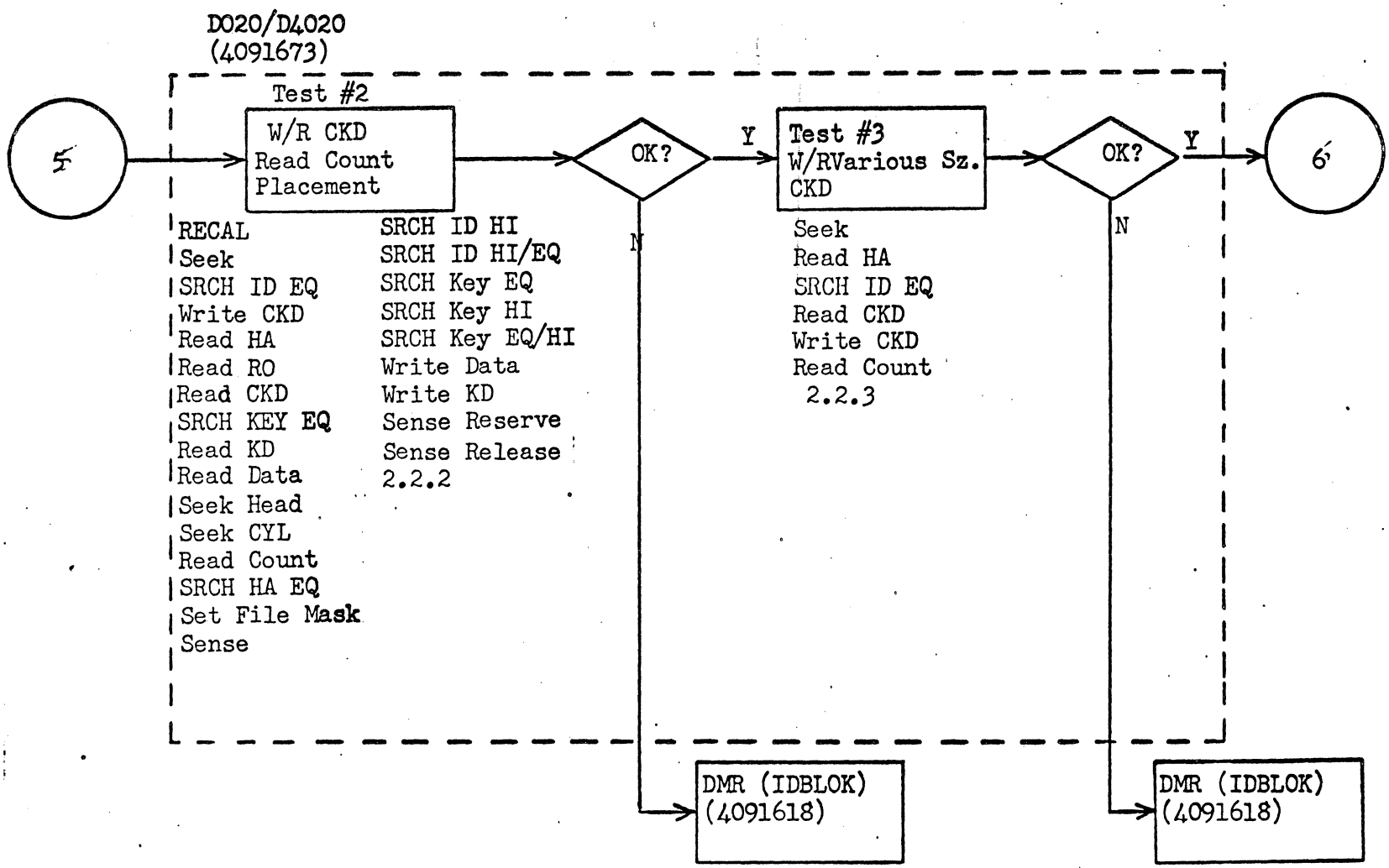
A Cn T4 Jnn.B Test #4 Performs a complete surface analysis and should indicate unusable portions of the disc pack.

A Cn T20 #Jnn.B Test #20 checks subsystem ability to flag defective track and choose alternate.

4091200


D110
(4091681)
4'
Test #2
Two Point
Positioning
Seek
Read HA
2.2.2
OK?
Y
N
Test #3
Four Point
Posit.
Seek
Read HA
2.2.3
OK?
Y
N
Test #4 is Optional
Test #4
Selected
Seq/Posit.
Seek
Read HA
2.2.4
OK?
Y
N
Test #5
Worse Case Act.
Seek
Read HA
2.2.5
OK?
Y
N
5
D110
(4091681)
A Cn T4 #Jnn V17/XXXXXXXX01
Four CYL. Seeks Recycled
D110
(4091681)
A Cn T4 #Jnn V17/XXXX01.B
Two CYL. Seek Cycled Continuously
DMR (IDBLOK)
(4091618)
Use SIO to Issue Seeks to
Failing cylinders.
See Explanation
D110
(4091681)
A Cn T4 #Jnn V17/0607060901.B
Change V17 param. to include Cylinders
11,18,36,70,76,81,86,and 198
(B,12,24,46,4C,51,56,C6 in HEX)

4091700

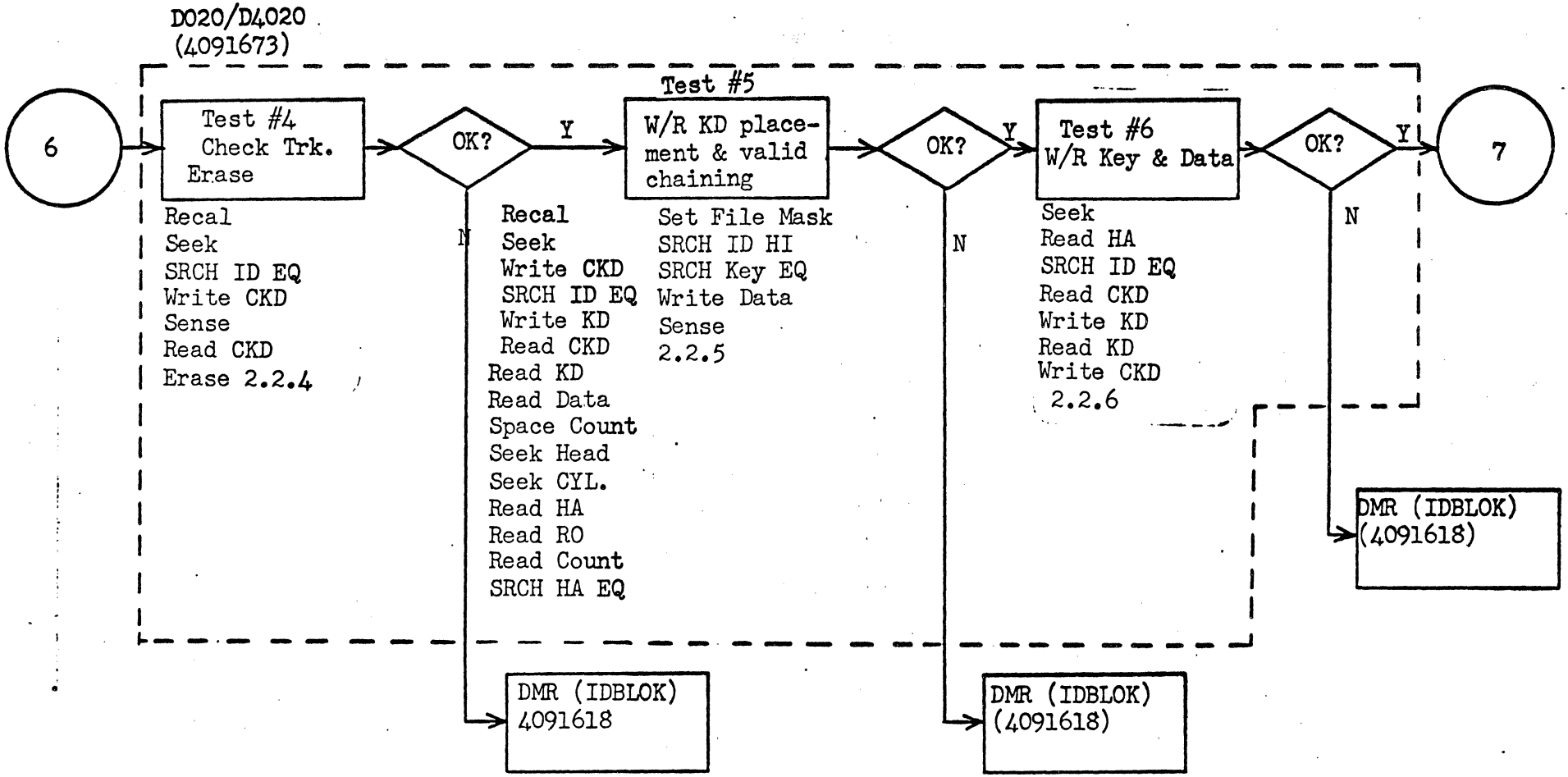


See Explanation

MAR 1 1971

11.

4091700

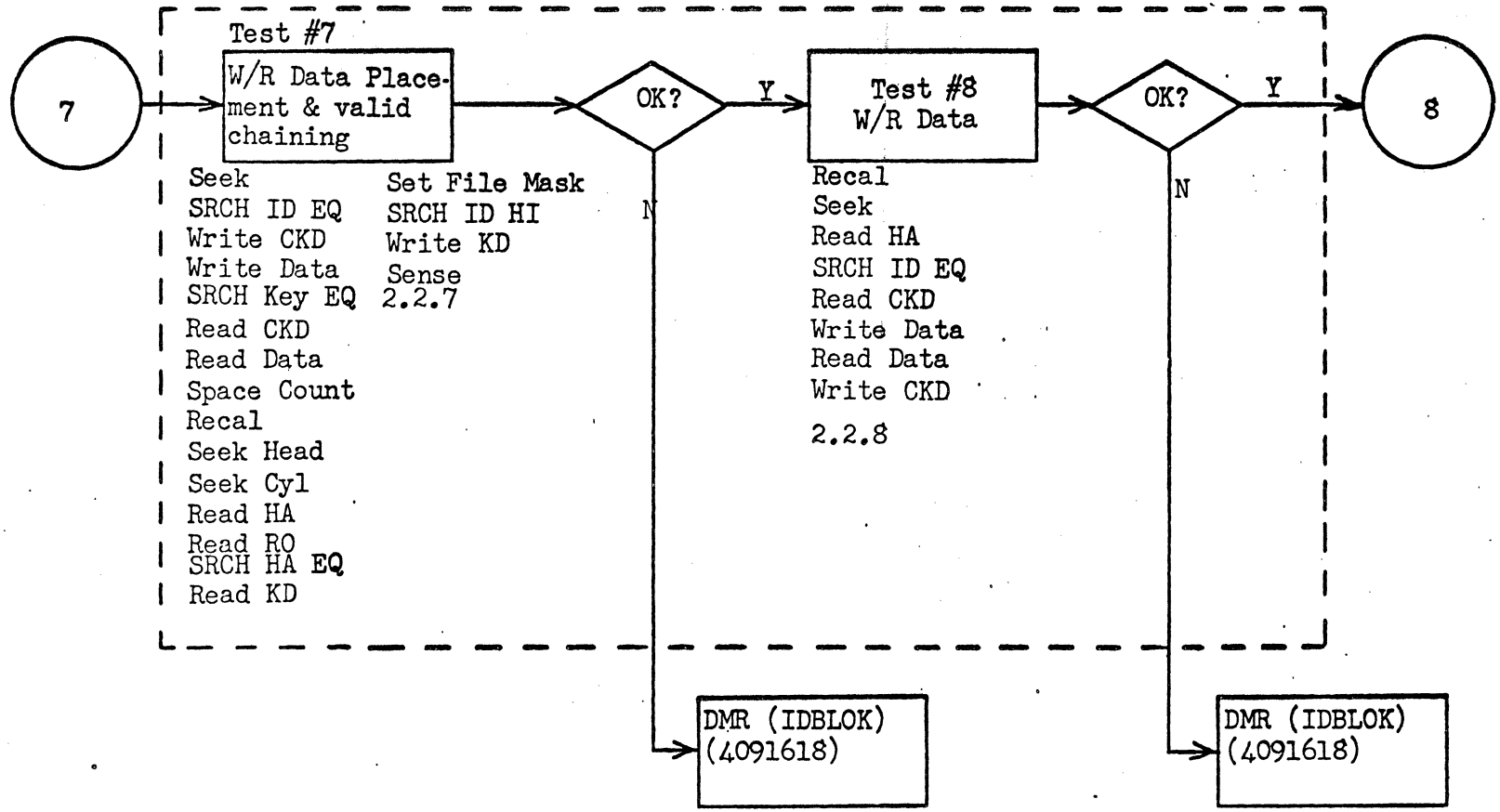


See Explanation

MAR 1 1971

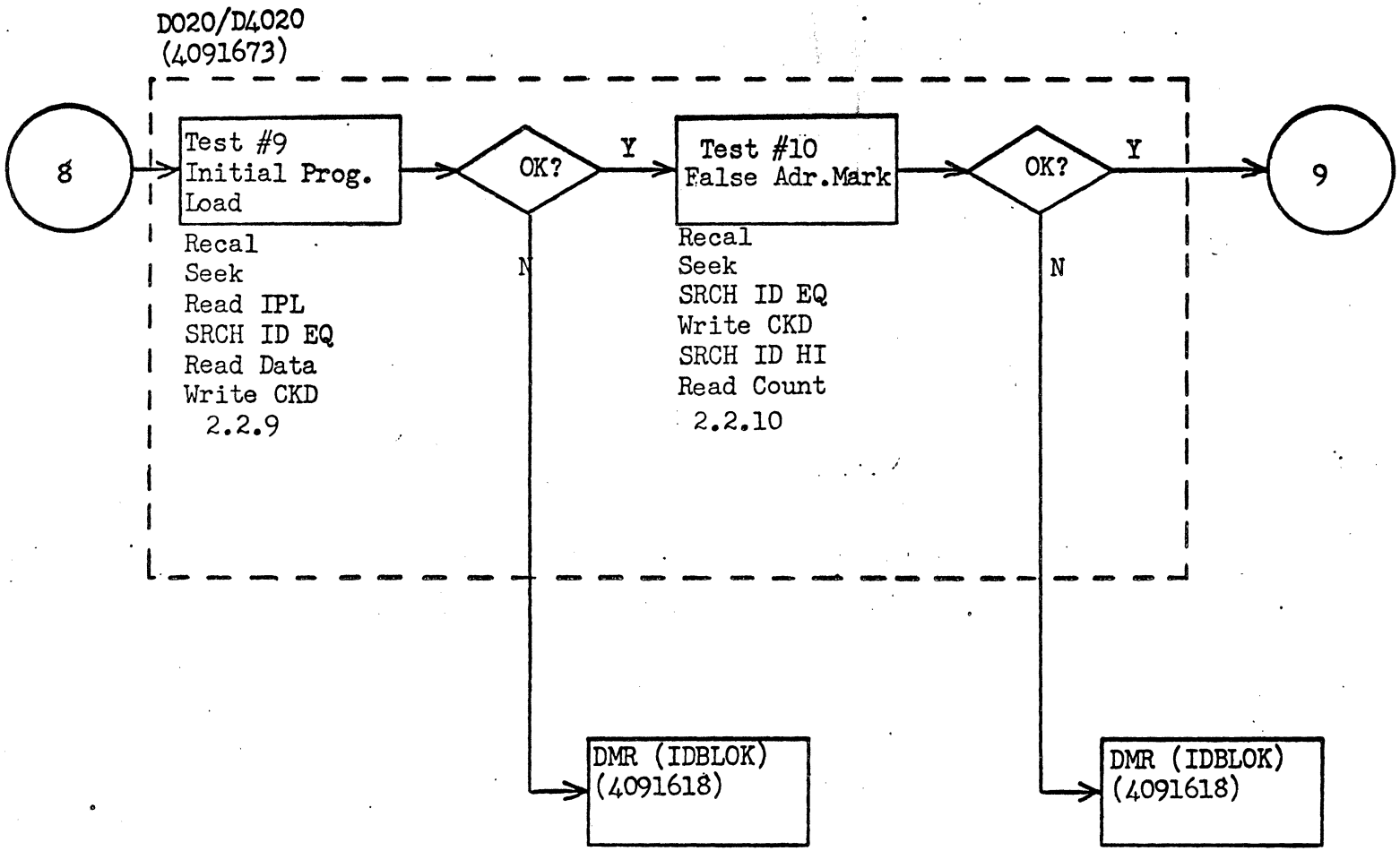
4091700

D020/D4020
(4091673)

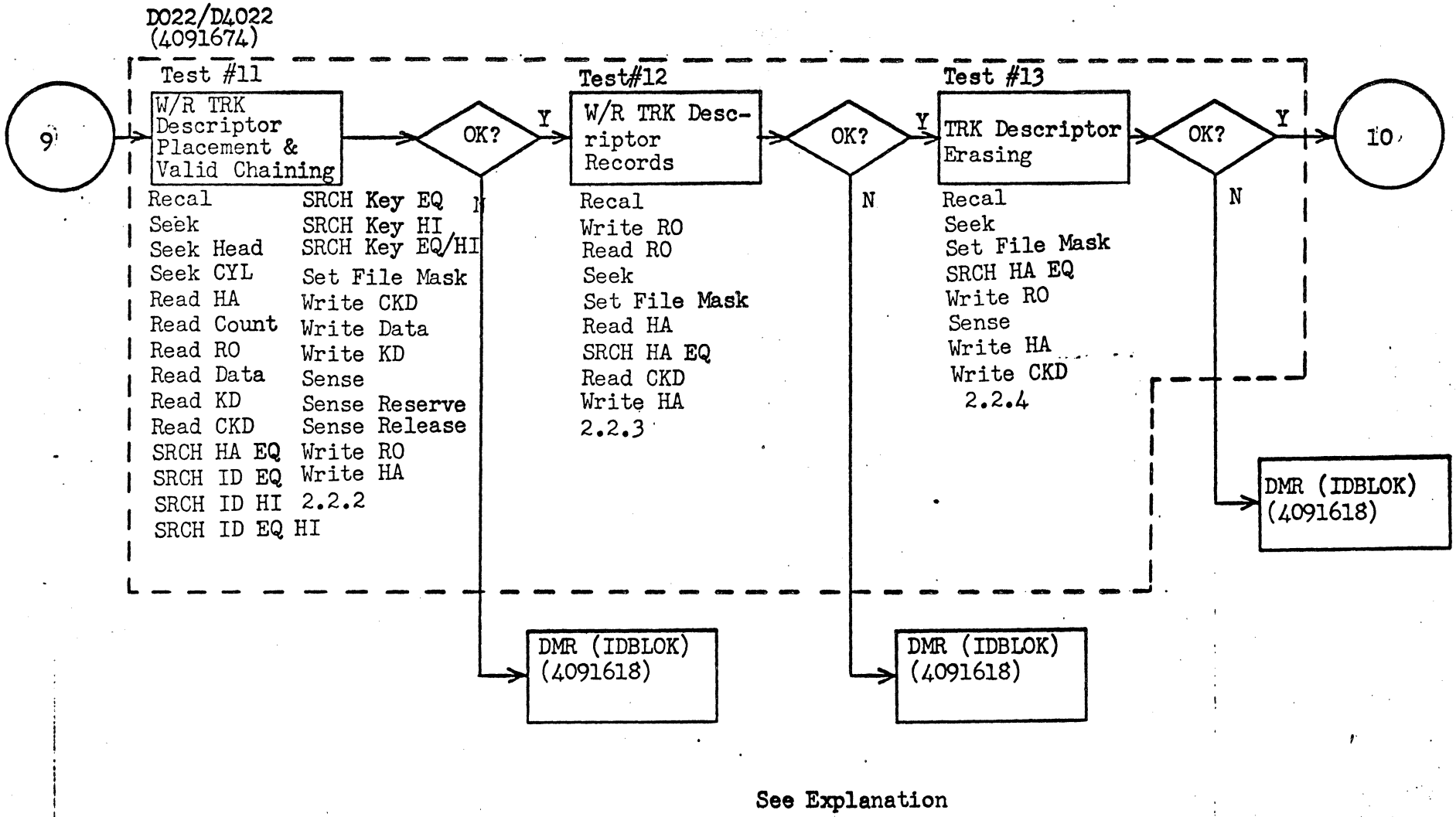


See Explanation

4091700

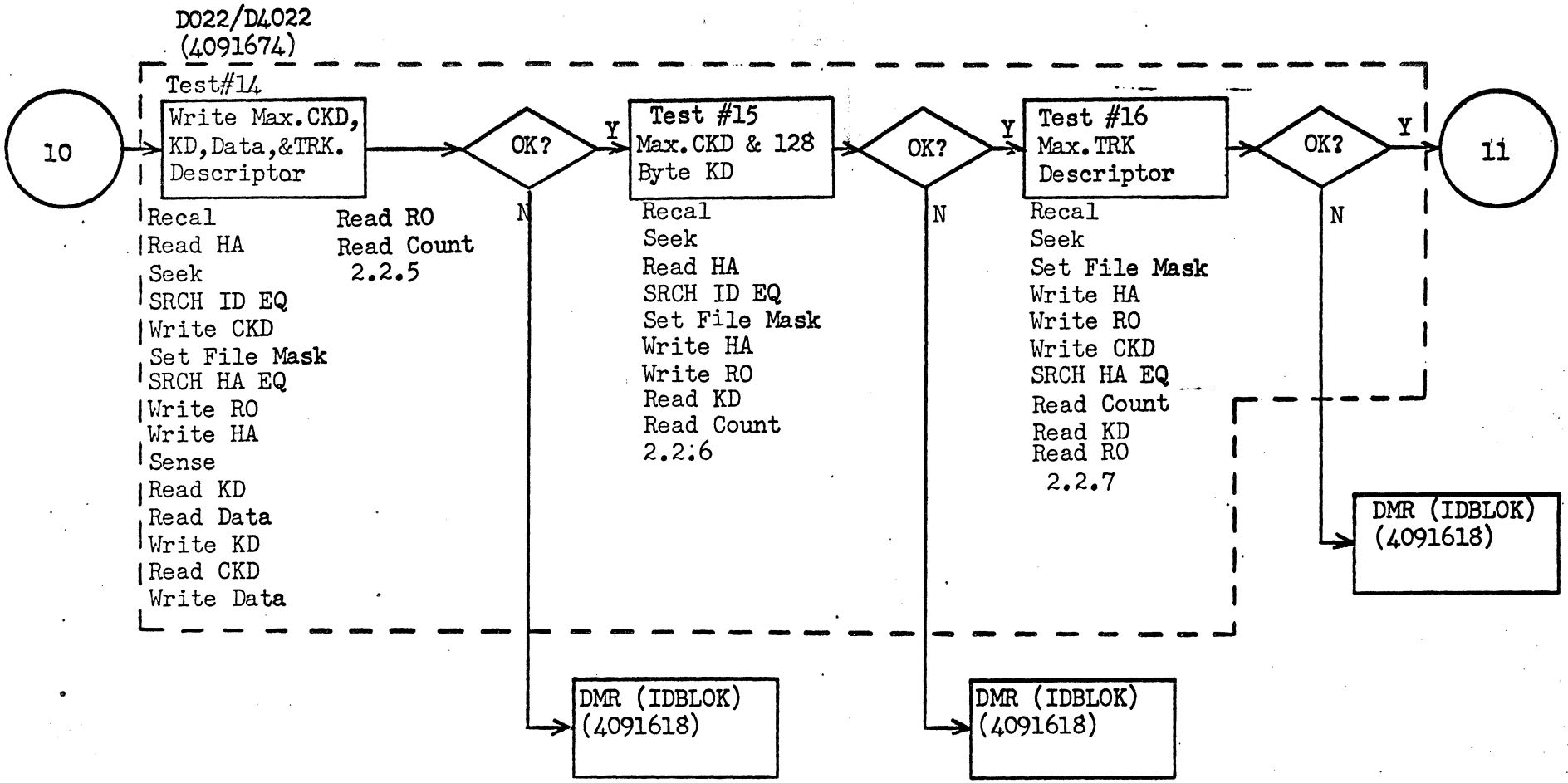


See Explanation

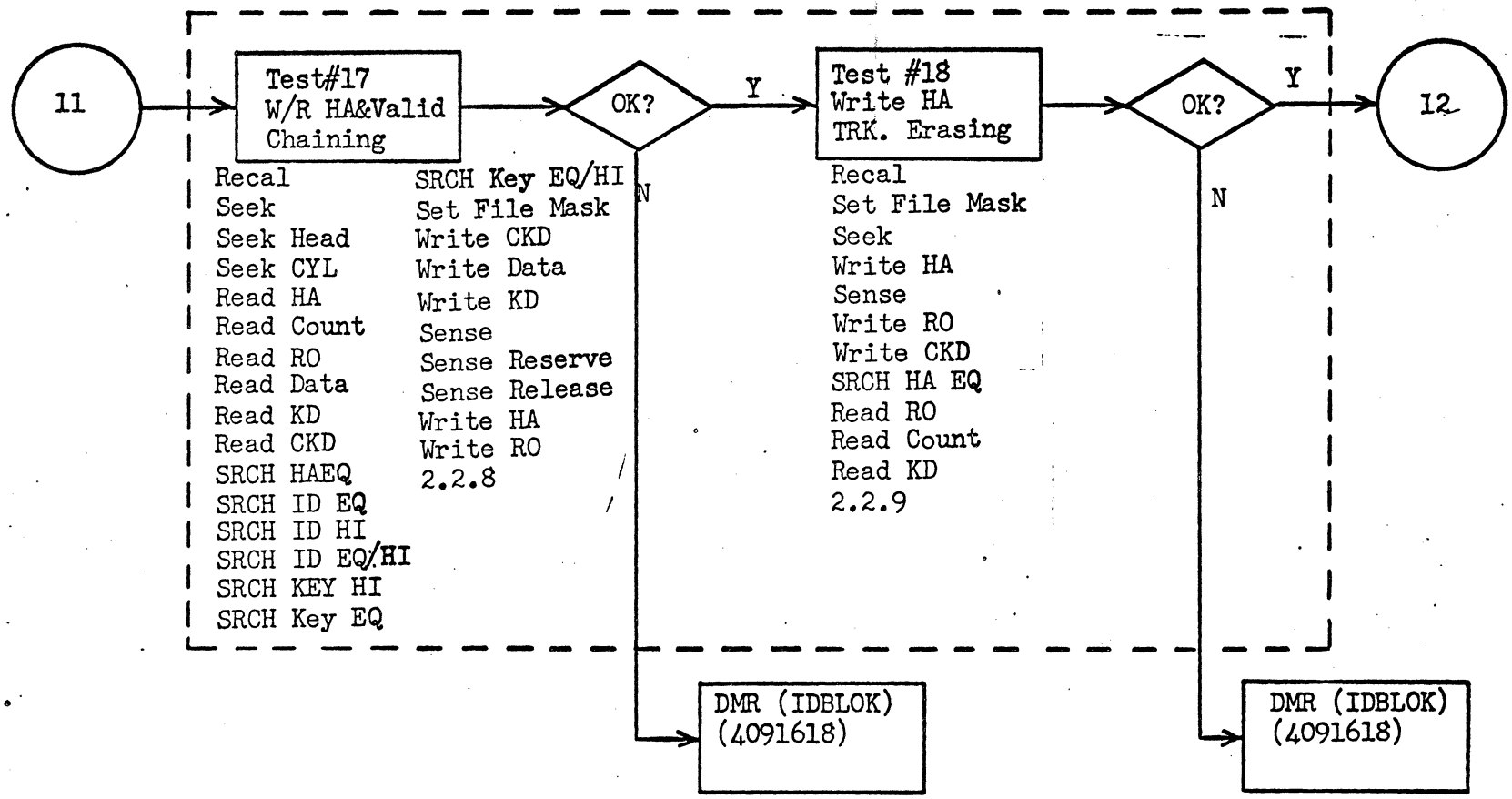


See Explanation

4091700

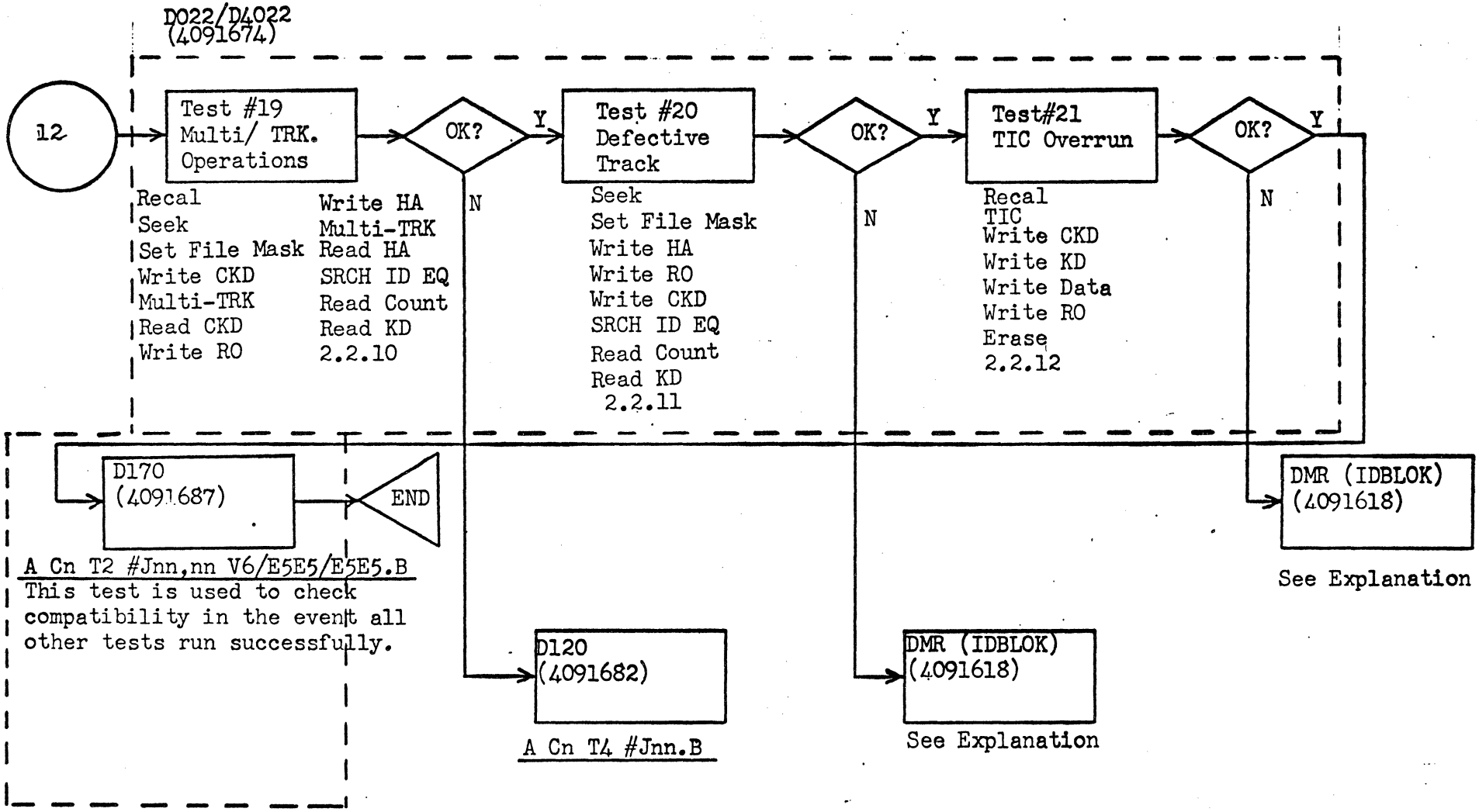


See Explanation



See Explanation

4091700



MAR 1 1971

4091700